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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/916,629 08/22/97 COBBLEY

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IM22/0510

EXAMINER

MITCHELL, S

ART UNIT

PAPER NUMBER

1733

DATE MAILED: 05/10/99

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

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# Office Action Summary

Application No.

08/916,629

Applicant(s)

Cobbley et al

Examiner

Shawn A. Mitchell

Group Art Unit

1733



☒ Responsive to communication(s) filed on Aug 22, 1997

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-39 is/are pending in the application.

Of the above, claim(s) 23-39 is/are withdrawn from consideration.

☐ Claim(s) is/are allowed.

☒ Claim(s) 1-22 is/are rejected.

☐ Claim(s) is/are objected to.

☐ Claims are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.

☐ received in Application No. (Series Code/Serial Number) .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2 and 4

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## DETAILED ACTION

### *Election/Restriction*

1. Claims 23-39 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to a non-elected invention. Election was made **without** traverse in Paper No. 5.

### *Specification*

2. The following items in the specification were corrected by informal examiner's amendment: on page 10 line 11, "a" was deleted.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2 and 15-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 2, the phrase "or the like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

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The term "room temperature" in claims 15 and 21 is indefinite because Applicant has not clearly set forth a definition for what temperature range constitutes "room temperature". It is noted that in the specification (e.g., on page 8 line 2), a curing temperature range of 20-30 C has been specified, and on page 10 lines 12-13, an ambient temperature is defined as 20-30 C. It is proposed to substitute the temperature range of 20-30 C for the term "room temperature" in claims 15 and 21.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-10 and 12-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen (US Patent 5,150,195) in view of Park et al (US Patent 5,834,836), Cain (US Patent 5,656,945), and Mariotti et al (US Patent 4,490,515).

Nguyen is directed to a method for bonding dies to lead frames wherein a rapidly cured cyanate ester adhesive is used. The cyanate ester adhesive is heated to 200 C and cures in less than 2 minutes. Nguyen states that rapid curing ability of the adhesive is especially important in

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such applications due to the continuous processes for production of such bonded semiconductor assemblies. The reference fails to specifically recite a cure time of from about 0.25 seconds to 60 seconds and room temperature curing of the adhesive.

Cyanoacrylates are well-known and conventional rapid curing adhesives in the art. Use of cyanoacrylates to bond dies to lead frames is well-known and conventional in the art as evidenced by Park and Cain (Park col 4 lines 39-46; Cain col 8 lines 10-13). In addition, cyanoacrylate adhesives with the particular monomer structure disclosed and claimed by applicant are disclosed by Mariotti et al. Mariotti teaches that such cyanoacrylate adhesives possess exceptional cure speed, are especially suited for production line applications, and can be initiated by water (see claim 1 and col. 1 lines 20-34).

It would have been obvious to one of ordinary skill in the art to use the rapid curing adhesive of Mariotti in the method of Nguyen since Nguyen teaches the desirability of a rapidly curing adhesive in bonding dies to lead frames. One of ordinary skill in the art would have been motivated to look to cyanoacrylate adhesives like those of Mariotti because use of cyanoacrylate adhesives to bond dies to lead frames was known in the art as shown by Park and Cain. One of ordinary skill in the art would have readily appreciated the additional benefits of using the particular cyanoacrylate adhesive of Mariotti in the method of Nguyen as providing superior rapid curing, ease of initiation, and room temperature curing, thus eliminating the process expense and potential damage to components during heat curing an adhesive.

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Regarding claim 1, the cure time of the particular cyanoacrylate adhesive taught by Mariotti is less than one minute (col. 1 lines 29-33). As to claims 2 and 21, Cain discloses that anaerobic cement as well as cyanoacrylate adhesives can be used in die bonding applications (col. 8 lines 10-13). Regarding claims 3, 13, and 16, use of catalyst to speed up curing time of such cyanoacrylate adhesives is well-known and conventional in the art. As to claims 4, 5, 18, and 19, mounting paddles are well-known features on common lead frames, and lead-on-chip lead frames are well-known and conventional in the art. Use of well-known and conventional lead frame designs with the method of Nguyen as modified would have been within the purview of one of ordinary skill in the art.

Regarding claims 8, 9, and 20, syringe dispensing, stenciling, dip coating, spraying, and dot shooting are all well-known and conventional methods of dispensing adhesive in such applications. As to claims 10, 12, 17, and 22, addition of conductive, insulating, reinforcing, moisture resistant, and thermal stability fillers are all well-known and conventional in the art for use with cyanoacrylate adhesives.

It is noted that no special curing atmosphere is specified for the adhesive of Mariotti. One of ordinary skill in the art would have readily appreciated that the lack of a special curing atmosphere implied that the adhesive was cured in the ambient atmosphere. In addition, it is well-known and conventional in the art that cyanoacrylate adhesives of this type are cured in ambient air.

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7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied above in paragraph 6 of this office action, and further in view of Hiraoka (US Patent 5,589,554).

Hiraoka discloses that cyanoacrylate adhesives of the type taught by Mariotti (including the same monomer structure; see column 4 of Hiraoka) can be initiated by the trace amount of moisture present on the surfaces of adherens (col 1 lines 15-18). One of ordinary skill in the art would have readily appreciated that the cyanoacrylate adhesive of Mariotti could be initiated in the same way, especially since Mariotti emphasizes the ease with which the adhesive is initiated with water under most circumstances.

### *Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schrock (US Patent 5,861,678) is particularly relevant to the instant application since Schrock discloses use of an analogous bonding method for flip-chip mounting. However, Schrock is not available as prior art under any subsection of 35 USC 102.

Card et al (US Patent 4,793,887) demonstrates that cyanoacrylate adhesives are uniformly cured in ambient air.

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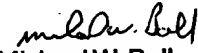
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Shawn Mitchell** whose telephone number is **(703) 305-0068**. The examiner can normally be reached on Monday through Friday from 8 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball, can be reached on (703) 308-2058. The official fax number for this Group is (703) 305-7718.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Shawn Mitchell



May 4, 1999

  
Michael W. Ball  
Supervisory Patent Examiner  
Technology Center 1700